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December 12, 1995

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**BY HAND DELIVERY**

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William F. Caton  
Acting Secretary  
Federal Communications Commission  
1919 M Street, N.W., Room 222  
Washington, D.C. 20554

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**Re: In the Matter of Advanced Television Systems and Their Impact  
Upon the Existing Television Broadcast Service  
MM Docket No. 87-268**

Dear Mr. Caton:

Please find enclosed for filing the original and five (5) copies of the Comments of Microsoft Corporation in response to the Fourth Further Notice of Proposed Rulemaking and Third Notice of Inquiry in MM Docket No. 87-268.

If you have any questions or need any additional information please feel free to contact me at (202) 662-8408.

Sincerely,

  
Stanley M. Gorinson

Enclosures

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BEFORE THE  
FEDERAL COMMUNICATIONS COMMISSION  
WASHINGTON, D.C.

IN THE MATTER OF  
ADVANCED TELEVISION SYSTEMS  
AND THEIR IMPACT UPON THE  
EXISTING TELEVISION BROADCAST  
SERVICE

MM Docket No. 87-268

COMMENTS OF MICROSOFT CORPORATION

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December 12, 1995

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**BEFORE THE  
FEDERAL COMMUNICATIONS COMMISSION  
WASHINGTON, D.C.**

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ADVANCED TELEVISION SYSTEMS  
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MM Docket No. 87-268

**COMMENTS OF MICROSOFT CORPORATION**

MICROSOFT CORPORATION submits these comments in response to the Commission's Fourth further Notice of Proposed Rulemaking and its Third Notice of Inquiry (NPRM/ NOI). Technology has a habit of advancing as quickly as the human mind can innovate. Regulation, however, marches at a much slower pace as the present proceeding demonstrates. Various proposals are advanced by the Commission in the NPRM/NOI as the result of changed circumstances (NPRM/NOI ¶ 1), and new assumptions (*Id.*, e.g. ¶ 4), yet ATV is not yet commercial. That regulatory conundrum is never-ending. The Commission is attempting to regulate what it believes represents reality, although that reality is changing as the administrative process goes forward.

The NPRM/NOI contains many areas about which the Commission seeks comment. Microsoft will not try to respond to each specific issue, but will limit our comments to certain areas. However, as a general matter, we do address the Commission's existing approach to the

introduction of commercial ATV service. First, some of the Commission's proposals seem based on the assumption that the Grand Alliance standards will be workable and will aid compatibility with computers, thereby supporting the National Information Infrastructure ("NII"). (NPRM/NOI ¶¶ 15-18.) That is a significant overstatement and, since the standards once adopted will be frozen in place for a significant period, these barriers to compatibility must be overcome before a standard is adopted. Second, we believe minimal government intrusion is warranted and that the Commission, as it has done in other instances, should permit the marketplace to make choices rather than government. Moreover, where such intrusion is warranted, that intrusion should be the minimum demonstrably necessary — the burden being on the government to make that showing — and should be the least burdensome means for achieving the regulatory goal. Using those principles, it would appear that at least in some instances, the Commission's proposals reach too far, make choices that are inappropriate for government to make, and are needlessly complex. We set out our views in more detail below.

## **DISCUSSION**

Commercial television spectrum allocation began in 1941 and the NTSC standard was adopted that same year.<sup>1</sup> The NTSC standard fixed the basic engineering characteristics of the production, distribution, transmission and reception of television for more than half a century.<sup>2</sup>

The ATV proceeding is an effort to bring regulation in line with technological capabilities, but this has not been an easy task. For example, in 1987, the Commission froze new

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<sup>1</sup> Notice of Inquiry, *In the Matter of Advanced Television Systems*, MM Docket 87-268, RM-5811, 2 FCC Rcd. 5125 at ¶ 5 (1987).

<sup>2</sup> *Id.*

television station applications and allotment requests in 30 major cities on the ground that the FCC might approve an ATV system using more than the current 6 MHz per station.<sup>3</sup> But, in its First Report and Order, the FCC decided ATV would use no more than 6 MHz via simulcast technology.<sup>4</sup> The Commission has also set a fifteen year conversion period for ATV implementation.<sup>5</sup>

The purpose of these regulatory timetables and assumptions was a belief by the Commission that “free” broadcasting must be maintained and that the surest way to achieve that goal was to provide current broadcasters with the ability to provide that new service.<sup>6</sup>

It is against this background that the Commission’s request for comments must be assessed. The FCC has made several initial assumptions. First the Commission assumes that the Grand Alliance standard will promote compatibility. Microsoft takes issue with the Commission’s Grand Alliance assumption. Second, the Commission assumes broadcasters must provide ATV service, and that assumption sets the perimeter of the scope of acceptable comments. Microsoft takes no position on that assumption in these comments other than to note, as will be evident below, that the assumption leads to some rather strained analysis in the NPRM/NOI.

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<sup>3</sup> Tentative Decision and Further Notice of Inquiry, *In the Matter of Advanced Television Systems*, 3 FCC Rcd. 6520 at ¶ 7 (1988).

<sup>4</sup> 5 FCC Rcd. 5627 (1990).

<sup>5</sup> Second Report and Order/Further Notice of Proposed Rulemaking, 7 FCC Rcd. 3340 ¶ 53 (1992).

<sup>6</sup> Tentative Decision and Further Notice of Inquiry ¶ 73.

# **1. The Grand Alliance Proposed Standard Does Not Promote Compatibility Between Television and Computing**

The Advisory Committee on Advanced Television Service (“ACATS”) and the Grand Alliance have developed a single digital system and the Advanced Television Systems Committee (“ATSC”) has included that in its Digital Television Standard for HDTV transmissions. While this has some positive attributes, it will not, in its present form, advance the goal of compatibility. Indeed, several of the proposed specifications put forward by ACATS will obstruct compatibility with the computer industry, and should be explored carefully before they are implemented. For example, one of the main concerns of the computer industry is that its consumers be able to read clearly and easily all text and graphics. Thus, the industry has consistently used non-interlaced displays in its monitors rather than accept the lesser quality, degraded images produced by interlace scan techniques. Future ATV services also will be concerned about the quality of text and graphics as the services will most likely mix computer-generated text and graphics with broadcast television images and will be focused on educational and scientific purposes as well as simply for entertainment.

Any future standard, therefore, should ensure that the transmission channel and all displays meet these high quality requirements for images and text. Without this capability, it is likely that new services will find it difficult to proliferate — especially services optimized to provide a large amount of written content. Unfortunately, the proposed standard includes several interlace scan formats in addition to higher-quality progressive scan formats. Including these lesser quality formats is a mistake and should be remedied so that future ATV services may be

transmitted and displayed appropriately and a consumer may read his TV screen with the same ease as he can now read his computer screen.

Other examples of the proposed specifications' incompatibility with the computer industry abound. The proposed 60 Hz display rate does not permit the display of high quality resolution text and graphics. Without a rate above 70 Hz, consumers' eyes will become fatigued trying to view images over extended periods of time that appear to flicker in their peripheral vision. Requiring transmission formats to be a simple multiple of 72 Hz would be optimal for meeting the needs of both the computer and broadcast industries as it would permit easy format conversion between a computer rate of 72 Hz and a film rate of 24 Hz. If this is not done, format conversion may be very expensive to implement — especially if the box must also convert an interlaced signal into a progressive one — and would unnecessarily increase the cost of the box for the consumer.

The proposed standards also do not take into account the need for providing error-free data for information-based services. The inclusion of an error correction mechanism or protocol would ensure that consumers are not prevented by incompatibilities between error correction standards from receiving identical information. Another example of the computer industry's difficulties with the proposed specifications is that computer applications generally assume that content is provided using square pixel spacing. If non-square pixel spacing is permitted as proposed, the application would have to create new file types to contain the aspect ratio information to maintain artistic integrity and the non-square pixel spacing would have to be converted to allow for manipulation and conversion of graphic images on the computer screen.



## 2. Spectrum and Definition of Service Issues

The Commission has sought comment on whether 6 MHz is still a meaningful requirement (NPRM/NOI ¶ 21) and, if so, whether that 6 MHz should be used solely for free over-the-air broadcasting. (*Id.* ¶¶ 22-24).

As the Commission recognizes, digital encoding and transmission technology will permit great flexibility — including the rapid delivery of huge amounts of data, and the simultaneous delivery of video, voice and data. (NPRM/NOI ¶ 4). Bits are bits in a digital world and technology is becoming virtually unlimited in maximizing that flexibility. Moreover, that flexibility is being delivered by other technologies than over the air broadcasting. DBS is broadcasting standard definition television (“SDTV”) in digital format, and at least some are arguing that SDTV may be quite close to HDTV.<sup>7</sup> Cable is just as likely to provide an equally high quality digital signal.

If this is so, then it must necessarily raise some questions. First, if broadcasters intend to use SDTV format and that becomes the dominant format, then the whole exercise of conversion, simulcasting and transition periods may be simplified since licensees will have much more capability than if a true HDTV system is required rather than permitted. (NPRM/NOI ¶ 22). It is likely, in that circumstance, that the principal goal of licensees would be to provide a variety of revenue enhancing services rather than concentrating on “free over-the-air television.”<sup>8</sup> Given the expansion of video alternatives, the Commission’s goal of preserving “free over the air

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<sup>7</sup> “Hundt Eyes Auction Possibility,” *Broadcasting Cable*, November 6, 1995 at 6. The Grand Alliance standard will accommodate SDTV.

<sup>8</sup> Non-broadcast services have been increasing their share of viewers steadily over the last decade. There is no reason to assume that this will not continue.

‘services’” would seem to be an out-moded policy goal that leads to a great deal of regulatory tinkering as evidenced by the history of this proceeding. Accordingly, in Microsoft’s view, the best use of the spectrum can be determined by the licensee. Requiring a minimum amount of HDTV is likely to leave licensees with regulatory constraints that do not permit them to respond to competitive alternatives.<sup>9</sup> Licensees should be given maximum flexibility to provide a wide array of services and, to the extent any definition is required, it should focus only on what constitutes “free over the air broadcasting” in the ATV environment, and that should be narrowly defined.

### **3. Transition Period**

The Commission has set a 15-year transition to ATV, with a proviso for periodic reviews (NPRM/NOI ¶ 48). The stated purpose was to assure a smooth transition. (*Id.*) However, as noted previously, DBS is already transmitting digitally with SDTV capability, and cable and other delivery mechanisms are investing in digital technology (NPRM/NOI ¶ 50). Thus, competition may drive the conversion process much more quickly.

The Commission asks whether there is any objective benchmark to determine when broadcasters should cease NTSC transmission. We believe a variety of data could be used to evaluate the conversion rates such as ratings data or commercial surveys.<sup>10</sup> Each will be subject

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<sup>9</sup> Thus, the Commission’s various questions set out in ¶ 23 of the NPRM/NOI, because they are based on the assumption that broadcasters must be the principal licensees in this arena and that “free over the air broadcasting” must continue (NPRM/NOI, ¶ 22), suggest a focus that assumes the same level of regulatory control that hobbles the present system, even though there is no sound policy reason for that.

<sup>10</sup> The number-of-households measure suggested (NPRM/NOI ¶ 53) is likely to cause some controversy. Since many households have multiple receivers, would they continue to “rely” on NTSC if one receiver was still analog?

to some criticism. However, they should provide a sufficient snapshot to make a determination of marketplace penetration by digital technologies. The best standard is likely to focus on a sets-sold methodology. When sets sold achieves some reasonable percentage, say 70% of households in the U.S. that currently receive over-the-air broadcast television, then NTSC transmission should be permitted to cease 36 months later, allowing persons who have not yet converted sufficient time to make the change.

#### **4. Recovery of Spectrum**

The Commission intends to require the licensee to cede one 6 MHz allocation at the end of the transition (NPRM/NOI ¶¶ 57-58). The Commission wants to recover spectrum in such a way as to promote the formation of large contiguous bands of spectrum (NPRM/NOI ¶ 59). Moreover, in the NOI (*Id.* ¶ 86), the Commission notes that with the advent of digital technology, broadcasting may be able to make more efficient use of spectrum, especially if that spectrum is available in contiguous blocks. (*Id.*) Accordingly, comments were requested from other industries, including the computer industry. (*Id.*)

As with other efforts to predict the advance of technology, this is unlikely to lead to much useful insight at this point. Suffice it to say, contiguous bandwidth is more likely to lead to national services. On the other hand, at the time spectrum is recovered there may be proposals for a variety of local services that would be directed to specific types of end users. Technological possibilities are increasing so rapidly that contiguous spectrum availability is most likely to provide the greatest flexibility for future uses when spectrum is recovered.

## CONCLUSION

Microsoft hopes that these comments have been of use to the Commission.

Respectfully submitted,

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